1.   (currently canceled)

2.   (currently canceled)

3.   (currently canceled)

4.   (currently amended) The apparatus of claim [[3]] 5, wherein the lower interface to

receive the request from at least one of the first and second lower peers to search for the target

peer.

5.   (currently amended) ~~The~~ An apparatus of ~~claim 2~~ comprising:

        a cache of a current peer in a current ring at a current level to store information of ring

peers within the current ring, the current ring being part of an hierarchical ring structure of

peer-to-peer (P2P) nodes, the hierarchical ring structure having at least one of a lower level

and an upper level;

        a peer locator coupled to the cache to locate a target peer in the cache in response to a

request to search for the target peer; and

        a peer interface coupled to the peer locator to interface to at least one of a first lower

peer in a first lower ring at the lower level and a first upper peer in a first upper ring at the

upper level, the peer interface to forward the request to search for the target peer to at least

one of the first lower peer and the first upper peer when the target peer is not located in the

cache;

        wherein the peer interface comprises:

        a lower interface to interface to at least one of the first lower peer and a second lower

peer in a second lower ring at the lower level, the lower interface to forward the request to at

least one of the first and second lower peers to search for the target peer when the target peer is not located in the cache; and

an upper interface to interface to at least one of the first upper peer and a second upper peer in a second upper ring at the upper level, the upper interface to forward the request to at least one of the first and second upper peers to search for the target peer when the target peer is not located in the cache.

6.   (previously presented) The apparatus of claim 5, wherein the upper interface to receive the request from at least one of the first and second upper peers to search for the target peer.

7.   (currently amended) The apparatus of claim [[2]] 5, wherein the cache stores information of at least one of the first and second lower peers.

8.   (currently amended) The apparatus of claim [[2]] 5, further comprising:

a registrar to process registration of at least one of the current peer to the first upper peer and the first lower peer to the current peer, the registration including the information on one of the current peer, the first upper peer, and the first lower peer.

9.   (currently amended) The apparatus of claim [[1]] 5, wherein the peer locator comprises:

an information retriever to retrieve the information of the target peer if the target peer is located in the cache,

10.   (currently amended) The apparatus of claim [[1]] 5, wherein the information includes an address of the target peer.

11. (currently canceled)

12. (currently canceled)

13. (currently canceled)

14. (currently amended) The method of claim ~~13~~ 15, wherein interfacing to at least one of

the first lower peer and a second lower peer comprises:

receiving the request from at least one of the first and second lower peers to search for

the target peer.

15, (currently amended) ~~The~~ A method ~~of claim~~ 12 comprising:

storing information of ring peers within a current ring at a current level in a cache of a

current peer in the current ring, the current ring being part of an hierarchical ring structure of

peer-to-peer (P2P) nodes, the hierarchical ring structure having at least one of a lower level

and an upper level;

locating a target peer in the cache in response to a request to search for the target peer;

and

interfacing to at least one of a first lower peer in a first lower ring at the lower level and

a first upper peer in a first upper ring at the upper level to forward the request to search for the

target peer to at least one of the first lower peer and the first upper peer when the target peer is

not located in the cache;

wherein interfacing comprises:

interfacing to at least one of the first lower peer and a second lower peer in a second lower ring at the first lower level to forward the request to at least one of the first and second lower peers to search for the target peer when the target peer is not located in the cache; and

interfacing to at least one of the first upper peer and a second upper peer in a second upper ring at the upper level; and forwarding to forward the request to at least one of the first and second upper peers to search for the target peer when the target peer is not located in the cache.

16. (previously presented) The method of claim 15, wherein interfacing to at least one of the first upper peer and a second upper peer comprises:

receiving the request from at least one of the first and second upper peers to search for the target peer.

17. (currently amended) The method of claim 12 15, wherein storing the information comprises:

storing the information of at least one of the first and second lower peers.

18. (currently amended) The method of claim 12 15, further comprising:

processing registration of at least one of the current peer to the first upper peer and the first lower peer to the current peer, the registration including the information on one of the current peer, the first upper peer, and the first lower peer.

19. (currently amended) The method of claim 11 15, wherein locating comprises:

retrieving the information of the target peer if the target peer is located in the cache.

20.   (currently amended) The method of claim ~~11~~ 15, wherein storing the information

comprises:

storing an address of the target peer.

21.   (currently canceled)

22.   (currently canceled)

23.   (currently canceled)

24.   (currently amended) The system of claim ~~23~~ 25, wherein the lower interface to receive

the request from at least one of the first and second .lower peers to search for the target peer.

25.   (currently amended) ~~The~~ A system ~~of claim 22~~ comprising:

a requesting peer to generate a request to search for a target peer; and

a current peer in a current ring at a current level, the current ring being connected to the

requesting peer in an hierarchical ring structure of peer-to-peer (P2P) nodes, the hierarchical

ring structure having at least one of a lower level and a upper level, the current peer including a

P2P subsystem, the P2P subsystem comprising:

a cache to store information of ring peers within the current ring,

a peer locator coupled to the cache to locate the target peer in the cache in

response to the request, and

a peer interface coupled to the peer locator to interface to at least one of a first

lower peer in a first lower ring at the lower level and a first upper peer in a first upper

ring at the upper level, the peer interface to forward the request to search for the target

peer to at least one of the first lower peer and the first upper peer when the target peer is not located in the cache;

wherein the peer interface comprises:

a lower interface to interface to at least one of the first lower peer and a second lower peer in a second lower ring at the lower level, the lower interface to forward the request to at least one of the first and second lower peers to search for the target peer when the target peer is not located in the cache; and

an upper interface to interface to at least one of the first upper peer and a second peer in a second upper ring at the upper level, the upper interface to forward the request to at least one of the first and second upper peers to search for the target peer when the target peer is not located in the cache.

26.   (previously presented) The system of claim 25, wherein the upper interface to receive the request from at least one of the first and second upper peers to search for the target peer

27.   (currently amended) The system of claim 22 25, wherein the cache stores information of at least one of the first and second lower peers.
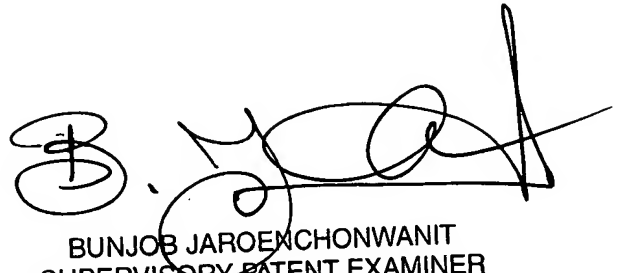
28.   (currently amended) The system of claim 22 25, wherein the P2P subsystem further comprising:

a registrar to process registration of at least one of the current peer to the first upper peer and the first lower peer to the current peer, the registration including the information on one of the current peer, the first upper peer, and the first lower peer.

29.   (currently amended) The system of claim 21 25, wherein the peer locator comprises:

an information retriever to retrieve the information of the target peer if the target peer is located in the cache.

30. (currently amended) The system of claim ~~21~~ 25, wherein the information includes an address of the ~~target~~ peer.

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